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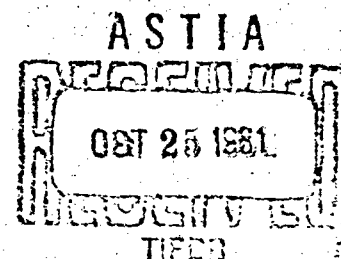
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Relationships Between Personality Traits,
Physical Proficiency, and Cadet Effectiveness Reports
of Air Force Academy Cadets

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**RELATIONSHIPS BETWEEN PERSONALITY TRAITS,
PHYSICAL PROFICIENCY, AND CADET EFFECTIVENESS REPORTS
OF AIR FORCE ACADEMY CADETS**

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ABSTRACT

Cadets in 3 Air Force Academy classes rated each other on 20 personality traits as well as on physical ability and officer potential. For two of the classes objective measures of physical proficiency were also available. Intercorrelation matrices within each class were analyzed to determine relationships between personality trait ratings and Cadet Effectiveness Ratings, and to determine the factor structure underlying the ratings. Traits such as responsibility, perseverance, good adjustment, poise, social polish, and social intelligence were most highly related to CERs, while traits of surgency or extroversion such as talkativeness, frankness, adventurousness and sociability bore little or no relationships to CERs. The major portion of individual differences in CERs are related to these personality trait ratings. When compared with OCS candidates and majors attending Command and Staff School, the Academy cadets were found to differ little from these groups in the pattern of the personality trait versus CER relationships. Five personality trait ratings were identified which correspond closely to the five (Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture) found in other analyses. A sixth factor was identified as physical ability.

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RELATIONSHIPS BETWEEN PERSONALITY TRAITS, PHYSICAL PROFICIENCY, AND CADET EFFECTIVENESS REPORTS OF AIR FORCE ACADEMY CADETS¹

INTRODUCTION

The study described in this report had several objectives. One of these was to determine relationships between ratings received by Air Force Academy cadets on a number of personality traits and ratings received on Cadet Effectiveness Reports (CER). The CER is a rating completed on each cadet by his peers, his upperclassmen, and his tactical officers. It measures leadership ability and officer potential and is weighted into the composite which determines the overall standing of each cadet in his class at graduation. Knowledge of such relationships is of practical as well as theoretical interest, since if sizable and differential correlations are found between CERs and personality traits, these relationships could well form the basis for a new type of CER based on specific traits instead of a global factor.² Such a revised CER would have merit not only for evaluation but also for counseling cadets for self-improvement purposes.

Another purpose of the study was to determine the extent to which Air Force Academy classes differ from each other and from other Air Force groups in the observed relationships between personality traits and CERs. That is, do the same relationships hold for cadets in their first year at the Academy as for cadets in their last year; or do the

¹Manuscript released by the authors for publication as an ASD Technical Note in September 1961.

²Subsequent to the initiation of the present study, a revised CER of this type was developed and put into use. This revision was based in part upon a preliminary analysis of data collected in this study.

viewpoints of the cadets toward effective officer behavior change as a result of their Academy training so that some traits which were quite important to CERs (i.e., highly correlated with CERs) in the first year lose their importance while other traits increase in importance? It might be hypothesized, for example, that among first year cadets, because of their lowly and restricted status, the ability to get along with others would be quite highly related to CERs. However, toward the end of their four years at the Academy, other traits such as responsibility, perseverance, aggressiveness, and effective intelligence might increase in importance. Other studies (Tupes, 1957; Tupes, 1959) have shown that among junior and senior officers the patterns of relationships between personality traits and Officer Effectiveness Reports (OERs) are highly similar and that the two groups agree fairly well in their beliefs concerning the relative importance to officer effectiveness of the various traits. Do cadets at the Academy see the same personality traits as being important to effective officer behavior as do these two groups of Air Force officers? Or is the environment at the Academy sufficiently different from other Air Force situations so that different relationships emerge?

Physical proficiency and athletic ability are emphasized strongly at the Air Force Academy. A third objective of the present study was to study the relationships between various measures of physical proficiency, CERs, and the personality trait ratings to determine whether a physical proficiency factor could be identified.

The final purpose of the study was to determine whether the same

factor structure underlay the trait ratings of Air Force Academy subjects as has been found in many other studies. In spite of differences in type of subject, rating situation, rating scale format, and type of rater, the factor structure of these personality traits has been shown to be remarkably invariant (Tupes & Christal, 1958; Wherry et al., 1959; Norman, 1961; Tupes & Christal, 1961). Thus few, if any, differences were expected in the Academy samples. However, the rating situation at the Academy differed somewhat from that of the other studies. For example, the seniors having lived, played, worked, and studied in close contact with their classmates for a $3\frac{1}{2}$ -year period knew each other much better than did subjects of the other studies. Hence a confirmation of the factor structure seemed in order.

METHOD

In January 1960, ratings were obtained on the Air Force Academy Classes of 1960 (228 cadets), 1962 (230 cadets), and 1963 (560 cadets), on the 22 bipolar variables shown in Table 1. The first 20 variables are among those used in the other trait-rating studies referred to above. The variable on Physical Aptitude was included to round out the measurement of Physical Proficiency. The variable on Officer Potential was included to obtain a measure based on peer ratings alone similar to the CER which is based on ratings by upperclassmen and tactical officers as well as peers. The rating group was the squadron, which varied in size from 15 to 25. Each cadet was instructed, for each rating variable in turn, to pick five cadets (not including himself) in his

Table 1. Air Force Academy Trait Rating Variables^a
and Their Factor Designations^b

Trait Nr ^c	Rating Nr ^d	Trait Rating Variable		Factor Name
		"A" (left) Pole	"B" (right) Pole	
14	01	Talkative	Silent	I. Surgency or Extroversion
28	06	Frank	Secretive	
16	10	Adventurous	Cautious	
29	15	Sociable	Self-contained	
10	02	Good-Natured	Spiteful	II. Agreeableness
20	07	Not Jealous	Jealous	
13	11	Mild, Gentle	Self-willed	
01	16	Cooperative	Obstructive	
18	03	Insistently Orderly	Relaxed, Indolent	III. Conscientious- ness
04	08	Responsible	Frivolous	
25	12	Conscientious	Unscrupulous	
15	18	Persevering	Quitting	
26	04	Well-Adjusted	Maladjusted	IV. Emotional Stability
06	13	Poised, Tough	Easily Upset	
12	19	Not Hypochondri- acal	Hypochondriacal	
11	09	Calm	Emotional	
08	17	Intellectual, Cultured	Boorish	V. Culture
27	05	Artistically Sensitive	Artistically Insensitive	
34	20	Imaginative	Practical, Logical	
19	14	Socially Polished	Clumsy, Awkward	
--	21	High Physical Aptitude	Low Physical Aptitude	
--	22	High Officer Potential	Low Officer Potential	

^aThe trait rating variables are defined in full in Appendix A. The 20 used in the present study are from among those used in earlier studies cited in the text. The definitions are those originally established by Cattell (1947).

^bThe factor designations and numbers refer to earlier studies in which each of these traits was found to load highly on the indicated factor.

^cThe trait numbers are those assigned to these variables in previous studies.

^dThe rating numbers are those assigned to these variables in the rating booklet (see Appendix A) used in the present study.

squadron who were best described by the left end of the bipolar trait and the five cadets who were best described by the right end. A total score was then obtained on each trait for each cadet by totaling the number of times he was picked for the left end of the trait and subtracting from that the number of times he was picked for the right end. This score was then divided by the number of raters, multiplied by 100 to remove decimals, and added to a constant to obtain only positive scores. The resulting scores were of such a nature that ratings on all cadets, regardless of squadron, could be put into a common distribution for further analysis. A copy of the rating instructions and definitions of the rating variables is included in Appendix A.

In addition to the rating variables listed in Table 1, certain other variables were available for one or more classes. These are:

1. The Cadet Effectiveness Rating (CER).

2. Physical Aptitude Examination. This is a test designed to measure physical aptitude of applicants for the Air Force Academy. It is based upon push-ups, speed of running, etc. The PAE is weighted into the composite score used for screening applicants and selection of cadets for admission into the Academy.

3. High School Activities Index-Athletic. This score reflects the amount and kinds of athletic activity engaged in by the cadet during high school. It is based on information furnished by the cadet's high school principal. It is weighted into the Academy selection composite.

4. High School Activities Index-Non-Athletic. This score reflects the amount and kinds of extra-curricular activity of other than an athletic nature engaged in by the cadet during high school. It is weighted into the selection composite.

5. Grade in Physical Education. This variable is based upon the grade received by the cadet in his physical education courses at the Academy.

Product-moment intercorrelations were computed among all variables available for each class. The complete intercorrelation matrices are presented in Appendix B with relevant portions thereof appearing in the Results section.

RESULTS

Relationships Between Personality Traits and CERs

In Table 2 are presented, for each class separately, the correlations between ratings on the personality traits and CERs. Also included in that table are correlations between scores on each of the five factors (obtained by summing scores on the four salient traits for each factor), and ratings on physical aptitude and officer potential and CERs. These same relationships are expressed graphically in Figure 1.

Table 2. Correlations Between Personality Trait
and Factor Scores and CERs

Trait Nr	Variable	Product-Moment Correlations with CERs in Class of:			3-Class Average
		1960	1962	1963	
14	Talkative	09	28	24	20
28	Frank	22	27	27	25
16	Adventurous	17	25	28	23
29	Sociable	05	14	29	16
Factor I	Surgency	15	26	30	24
10	Good-Natured	41	26	40	36
20	Not Jealous	41	20	35	32
13	Mild, Gentle	41	13	32	29
01	Cooperative	55	30	45	43
Factor II	Agreeableness	51	24	40	35
18	Insistently Orderly	22	37	35	31
04	Responsible	69	59	65	64
25	Conscientious	61	34	43	36
15	Persevering	65	64	65	65
Factor III	Conscientiousness	62	57	61	60
26	Well-Adjusted	59	48	61	56
06	Poised, Tough	58	57	62	59
12	Not Hypochondriacal	47	31	54	44
11	Calm	37	33	46	39
Factor IV	Emotional Stability	57	48	64	58
08	Intellectual, Cultured	48	49	55	51
27	Artistically Sensitive	27	25	39	30
34	Imaginative	28	33	35	32
19	Socially Polished	72	63	68	64
Factor V	Culture	50	50	58	53
	Rated Physical Aptitude	42	35	52	43
	Rated Officer Potential	83	72	74	76

NOTE: Decimal points omitted preceding all correlation coefficients.

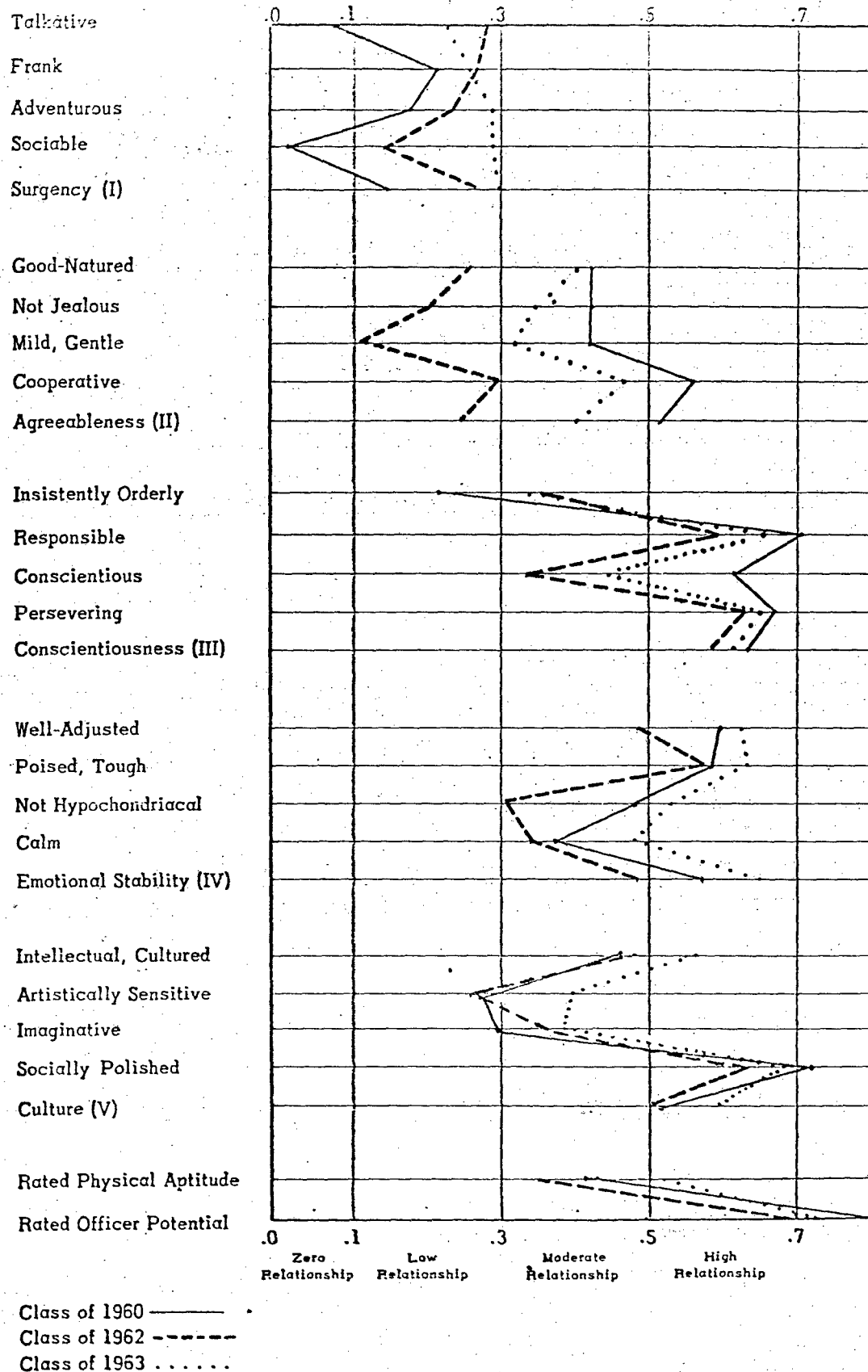


Fig. 1. Correlational Relationships between Personality Variables and CERs for Air Force Academy Classes of 1960, 1962, and 1963

Examination of Table 2 and Figure 1 indicates that while there are sizable differences in the relationships between CERs and the various traits and factors, these differences are quite stable from class to class. There is a tendency for the Class of 1960 to attach somewhat less importance to Factor I (Surgency) variables than do the other two classes and to attach somewhat more importance to Factor II (Agreeableness) variables. Reasons for these differences are not clear; however, it is tempting to speculate that the Class of 1960, with their status in the Academy well-assured, do not feel it quite so necessary to exhibit Surgent (extrovertiveness, activity, etc.) behavior and also feel that they can afford to be somewhat more Agreeable without in so doing running the risk of receiving low CERs as a result of buttering up others. The three classes are highly similar in the obtained relationships between Factors III, IV, and V variables. The Class of 1963 apparently attaches somewhat more importance to Physical Aptitude than do the other classes, but this is not surprising in view of the fact that the CERs for the Class of 1963 were received at the end of their first summer at the Academy--a summer during which sports, games, and other athletic activities are given considerable emphasis.

As noted above, differences in the magnitudes of the correlations between the various traits and the CERs were quite striking. In the fourth column of Table 2 are presented the average correlations across Academy class of each variable with CERs. The variables are listed below, grouped by the size of their average correlation with CERs.

High Relationship (\bar{r} of .5 and above)

Responsibility
Persevering
Factor III Total Score
Well-Adjusted
Poised, Tough
Factor IV Total Score
Intellectual, Cultured
Socially Polished
Factor V Total Score

Moderate Relationship (\bar{r} between .3 and .5)

Good-Natured
Not Jealous
Cooperative
Factor II Total Score
Insistently Orderly
Conscientious
Not Hypochondriacal
Calm
Artistically Sensitive
Imaginative

Low Relationship (\bar{r} between .1 and .3)

Talkative
Frank
Adventurous
Sociable
Factor I Total Score
Mild, Gentle

It is apparent from the above that those cadets who receive high CERs are, on the average, also those cadets who are perceived by their peers as possessing good character traits (responsible, persevering, and the like), as being emotionally stable, and as being cultured (in the sense of being intelligent and socially polished). To a somewhat lesser extent Agreeableness is related to CERs, but there appears

to be little relationship between the CERs received by the average cadet and the ratings he received on the Factor I variables (Talkative, Frank, Adventurous, and Sociable).

The above findings are borne out by a multiple correlational analysis carried out on the Class of 1960. In this analysis, the relationships between all the personality trait variables (including also ratings on Physical Aptitude) and CERs were studied jointly to determine to what extent individual differences in CERs could be accounted for by individual differences on the trait ratings. The results of this analysis are presented in Table 3, which lists not only the overall contribution of all variables taken together to the CERs, but also shows for each variable in turn its net contribution over and above that contributed by the variables preceding it in the table, and the contribution of each variable when the others are not considered. Variables are arranged in Table 3 in order of their net contribution to CERs; thus those at the top are those which contribute most, while those at the bottom contribute little if anything. For example, the variable Socially Polished appears at the top of the table (it attained this position because its correlation with CERs was higher than that of any other variable). From the column headed r^2 it can be seen that this variable alone can account for 51 percent (over half) of the differences in CERs. The variable Responsible appears next in the table. Responsibility alone can account for nearly

Table 3. Contribution of Trait Variables to Prediction of CER
For Class of 1960 (N = 223)

Variable ^a	Variable Number	Validity	r ² ^b	Beta Weight	R ² ^d	Contri- bution ^c	R
Socially Polished	14	.72	.51	.36	.51	.51	.72
Responsible	8	.69	.48	.31	.61	.10	.78
Rated Physical Aptitude	21	.42	.18	.18	.67	.06	.82
Poised, Tough	13	.58	.34	.16	.69	.02	.83
Talkative	1	.09	.01	.08	.70	.01	.84
Conscientious	12	.61	.37	.13	.71	.01	.84
Artistically Sensitive	5	.27	.07	-.14	.71	.004	.84
Frank	6	.22	.05	.04	.71	.002	.84
Good-Natured	2	.41	.17	-.06	.72	.003	.85
Persevering	18	.65	.42	.07	.72	.002	.85
Adventurous	10	.17	.03	.03	.72	.001	.85
Intellectual, Cultured	17	.48	.23	-.03	.72	.001	.85
Insistently Orderly	3	.22	.05	.00			
Well-Adjusted	4	.59	.35	.00			
Not Jealous	7	.41	.17	.00			
Calm	9	.37	.14	.00			
Mild, Gentle	11	.41	.17	.00			
Sociable	15	.05	.00	.00			
Cooperative	16	.55	.30	.00			
Not Hypochondriacal	19	.47	.22	.00			
Imaginative	20	.28	.08	.00			

^aArranged in order of contribution to the Multiple R.

^bPercent of CER accounted for by each variable.

^cIncrease in percent of CER accounted for as each variable is added to the prediction composite.

^dPercent of CER accounted for by a composite based on each variable in turn plus all preceding variables.

half (48 percent as shown in the r^2 column) of the CER differences. When taken together with Socially Polished, the two together can account for 61 percent (see column headed R^2) of individual differences on the CER. The net contribution of Responsibility is 10 percent (see column headed Contribution). The final column in Table 3 (headed R) is the conventional multiple correlation coefficient.

From Table 3 it is apparent that the trait ratings overall can account for 72 percent of the individual differences in the CERs. It is also apparent from Table 3 that only a few trait rating variables (the first four actually) can account for most of the personality variance in the CERs and that the others contribute little or nothing in addition.

Comparisons of Relationships Between Personality Traits and CERs for Air Force Academy, Officer Candidate School, and Command and Staff School Samples

In earlier studies (Tupes, 1957; Tupes, 1959) ratings were obtained on 30 personality traits (including the 20 traits of the present study) for groups of officer candidates (790 graduates from Classes in 1949, 1950, and 1951) and officers in the Air Force Command and Staff School (500 majors and lieutenant colonels in Class of 1959). For these groups, measures similar to CERs were obtained: military grades for the officer candidates and peer ratings on estimated officer effectiveness for the student officer group. Correlations between the personality trait variables and the CER-type measures are

presented graphically in profile form in Figure 2, along with correlations based on all three Academy classes combined.

Examination of Figure 2 indicates that the patterns of relationships between personality traits and the CER type measures are similar for the three groups. That is, the traits with the highest or lowest correlations with CERs are the same from group to group. Regardless of military status (whether the raters are OCS candidates, Academy cadets, or senior officers with years of commissioned experience), the traits which have relatively higher and relatively lower correlations with CERs are about the same. The level of the correlations (their magnitude), however, does differ. The OCS group and the Academy group in general made ratings which correlated to about the same degree with CERs. The senior officer group's ratings correlated somewhat higher with CERs for traits in the Factor I (Surgency) area and somewhat lower for traits in the Factor II (Agreeableness) area. It would appear that the senior officers believe it is more important to be surgent (extrovertive, assertive, etc.), and less important to be agreeable, than do cadets and officer candidates. This is understandable when differences in role are considered.

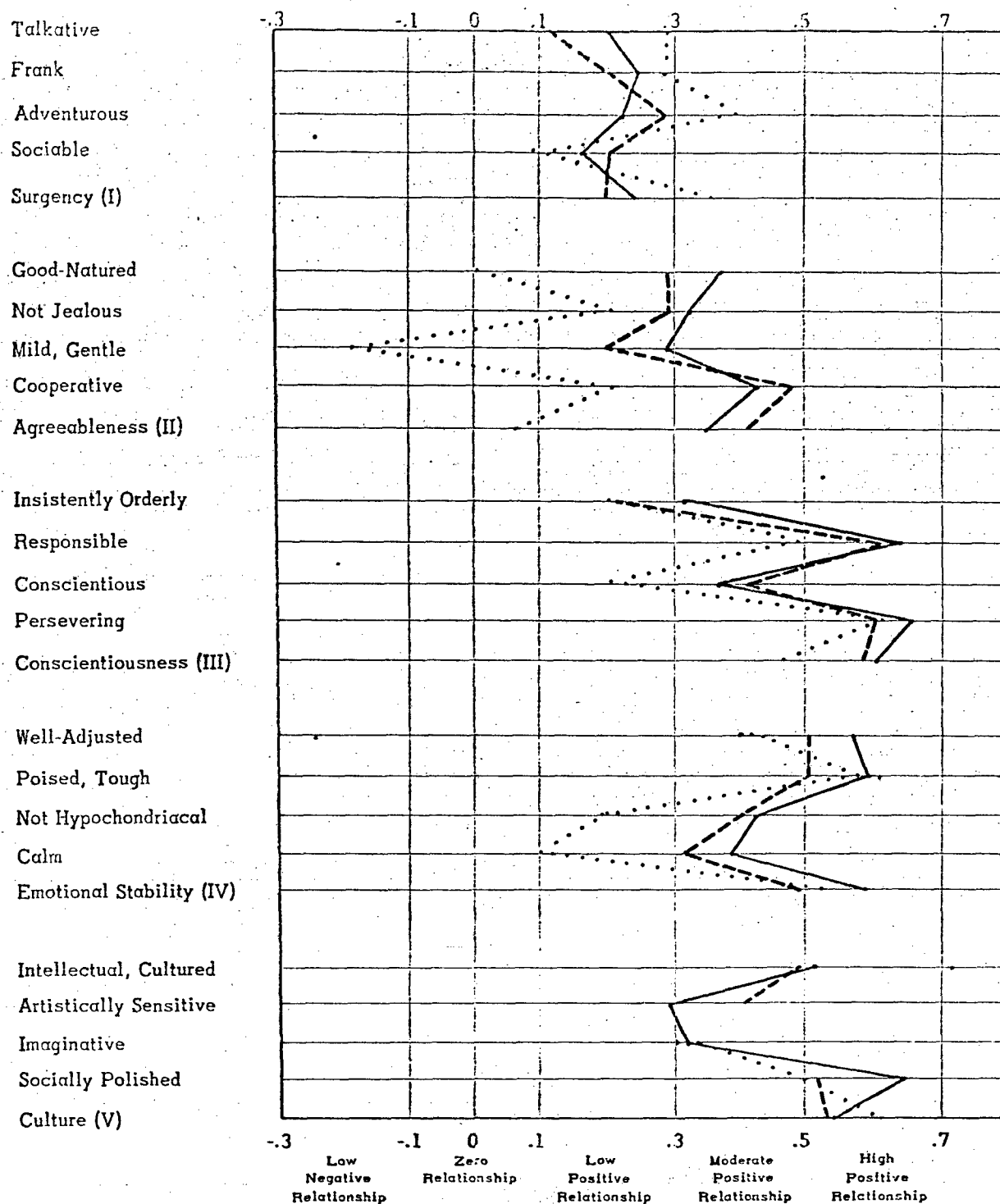


Fig. 2. Correlational Relationships between Personality Variables and CER Type Ratings for Air Force Academy Classes combined, OCS Candidates, and Senior Officers in Command and Staff School

Factor Structure Underlying the Personality Trait Ratings

The three complete correlation matrices (see Tables 5, 6, and 7 in Appendix B) were factor analyzed by the centroid method, with communality estimates based on the highest correlation in each row. For two of the classes, four random variables (variables set up by assigning scores to each subject based on a table of random numbers) were included to preclude the possibility of extraction and rotation of chance factors. The centroid factors were then rotated on the IBM 650 computer to a normal varimax (Kaiser, 1958) solution. For the Class of 1960, for which only the trait ratings and CERs were available, five factors were extracted and rotated. For the Classes of 1962 and 1963, several measures of physical ability were included as well as the four random variables. In each of these analyses, seven factors were extracted and rotated. For some reason (probably due to the inclusion of the physical ability measures and/or the random variables), the rotated factors for these two classes were not clear-cut with respect to the personality factors. Therefore, for these two classes only, a few further rotations were made graphically which brought the personality factors into line with other analyses. The original varimax rotated factors are presented in Appendix C (Tables 8, 9, and 10). The final rotated factors are presented in Table 4. Also included in Table 4 are the median loadings of each trait on each factor, based on the factor analyses discussed earlier of eight other groups.

Table 4. Rotated Factor Loadings for Air Force Academy Classes of 1960, 1962, and 1963^a

Trait Variable		I			II			III			IV			V			VI ^c			VII ^c			h ²			
Nr	Name	60	62	63	Median ^b	60	62	63	Median ^b	60	62	63	Median ^b	60	62	63	Median ^b	60	62	63	Median ^b	60	62	63	Median ^b	
14	Talkative	91	89	84	8	-08	-08	-11	-1	09	-10	-02	-2	-01	-02	-03	-1	01	06	03	0	05	00	-01	01	84 78 72
28	Frank	88	85	83	8	06	06	07	1	12	-13	01	-1	09	04	14	0	06	11	10	1	-04	03	05	-03	81 76 72
16	Adventurous	83	75	72	7	-03	02	16	1	-06	-40	-28	-4	35	33	44	2	03	13	11	1	04	00	04	-03	83 84 82
29	Sociable	89	79	83	7	-05	05	10	1	-04	-38	-21	-4	20	10	10	-1	06	04	-03	0	08	08	-06	04	85 79 75
10	Good-natured	18	21	32	1	76	81	79	8	09	-02	11	0	34	31	25	1	24	17	15	0	08	-01	-03	06	81 83 82
20	Not Jealous	-01	-03	-03	-1	76	69	78	8	04	-11	09	0	48	57	40	4	17	13	10	0	06	-03	03	08	83 84 78
13	Mild, Gentle	-21	-21	-12	-3	79	81	85	7	07	01	22	2	34	37	20	2	24	16	07	1	09	05	07	-05	86 85 82
1	Cooperative	26	28	25	2	72	77	72	6	11	-01	34	3	36	30	23	2	29	25	18	2	08	02	01	05	81 83 79
18	Inconsistently Orderly	-46	-16	-38	-2	08	-05	-19	-2	50	75	69	5	-15	-24	-29	0	44	29	08	4	19	06	-05	09	73 74 76
4	Responsible	-02	05	-11	0	50	48	31	3	56	56	81	6	25	28	14	2	46	49	26	3	19	11	-01	-05	93 88 85
25	Conscientious	-31	-29	-22	-2	64	64	47	4	34	52	74	6	15	15	05	1	41	32	15	3	19	08	-04	02	85 89 84
15	Persevering	03	07	-13	1	39	20	21	1	56	60	76	5	38	23	22	4	49	62	30	4	15	06	04	00	88 85 78
26	Well-Adjusted	26	18	-02	2	42	38	55	3	28	02	27	1	66	75	61	7	27	31	18	1	12	-01	10	12	85 84 78
6	Policed, Tough	35	32	05	3	00	02	22	0	29	09	22	0	66	70	69	7	37	38	31	2	04	02	08	09	80 76 67
12	Not Hypochondriacal	23	18	09	1	31	32	42	3	29	-05	11	0	66	69	71	6	14	15	02	0	14	18	15	20	72 71 71
11	Calm	38	20	14	-3	09	11	33	3	07	-25	-11	2	82	86	80	5	07	18	-03	1	00	00	09	02	84 80 78
8	Intellectual, Cultured	13	12	02	1	20	01	20	2	32	22	36	1	23	04	13	2	78	87	75	8	-07	-12	01	00	83 85 78
27	Artistically Sensitive	-01	-08	-05	0	17	07	-03	0	21	21	25	1	05	-18	-06	0	82	75	73	8	-04	-18	05	-03	74 71 60
34	Imaginative	35	20	16	1	23	11	19	1	00	-06	04	-1	11	-05	05	0	56	75	68	6	01	-07	-01	09	51 63 53
19	Socially Polished	33	25	07	0	17	27	05	3	30	21	22	2	45	29	28	2	65	71	48	5	03	07	-02	-08	86 78 66
	Rated Physical Aptitude	33	18	26	x	-04	09	06	x	11	-07	20	x	64	59	56	x	09	06	-16	x	46	61	16	-03	77 77 45
	HSAT Athletic	07	09	x	x	-02	11	x	x	-06	15	x	x	42	23	x	x	04	-04	x	x	55	60	-04	06	49 47 x
	Physical Aptitude Test	04	-05	x	x	-11	-01	x	x	02	02	x	x	31	19	x	x	08	02	x	x	46	78	10	03	34 65 x
	Grade in Physical Education	x	01	x	x	x	22	x	x	x	05	x	x	x	33	x	x	x	08	x	x	x	62	x	-15	x 06 x
	HSAT Non-Athletic	09	24	x	x	25	14	x	x	-07	21	x	x	04	-07	x	x	13	16	x	x	30	12	-06	09	19 17 x
	Rated Officer Potential	42	31	x	x	30	30	x	x	32	36	x	x	56	53	x	x	47	56	x	x	17	10	13	00	94 91 x
	CER	40	35	14	x	09	01	14	x	35	52	67	x	41	36	45	x	41	39	22	x	25	14	-07	-02	65 69 75
	Random Variable 1	-04	09	x	x	-10	00	x	x	-04	-14	x	x	13	03	x	x	02	06	x	x	-05	02	03	-17	03 06 x
	Random Variable 2	01	-05	x	x	-05	02	x	x	01	-10	x	x	01	03	x	x	00	03	x	x	02	-05	29	34	09 13 x
	Random Variable 3	08	05	x	x	00	-01	x	x	08	06	x	x	01	-07	x	x	01	-01	x	x	00	22	26	29	-08 10 x
	Random Variable 4	-02	00	x	x	04	01	x	x	-02	-20	x	x	05	07	x	x	00	09	x	x	-01	06	12	23	02 11 x

Notes: Decimal points omitted preceding all factor loadings.

^a An x indicates that a variable was not available for a particular class when the analyses were undertaken.

^b Median Values rounded off to single digits based on factor analyses of 8 other groups (See ASD-TR-61-97).

^c Factors VI and VII were not extracted for the class of 1960.

The first five factors are quite obviously the five personality factors found in the other analyses. The loadings of each trait on its primary factor are highly similar in all three Academy classes and are quite close to the median values. There is little doubt that the Academy classes do not differ in the factor structure underlying their ratings of these personality traits and that the classes do not differ from the other groups studied earlier.

Factor I seems to be a measure of surgency or extroversion. Cadets high on this factor are described as talkative, frank, adventurous, and sociable. Cadets low on this factor are described as silent, secretive, cautious, and self-contained. CERs have moderate loadings on Factor I in the Classes of 1962 and 1963, while in the Class of 1960 CERs have a loading of only a little more than zero.

Factor II seems to measure agreeableness at its high end and selfish, negativistic egotism at its low end. High scores on this factor are associated with good-nature, cooperativeness, mildness of manner, and lack of jealousy. Low scores are associated with spitefulness, obstructiveness, jealousy, and selfishness. CERs have essentially zero loadings on Factor II in all three classes.

Factor III is conscientiousness, or perhaps general good character. Persons high on Factor III seem to have all the virtues. They are rated as conscientious, responsible, determined, and orderly. Persons low on Factor III are rated as frivolous, unscrupulous, indolent, and quitting. CERs have their highest loadings on this factor.

Factor IV seems to be a measure of emotional stability versus

neurotic maladjustment. Cadets high on this factor are rated as poised, calm, well-adjusted and not hypochondriacal. Low cadets on the factor are rated as emotional, maladjusted, easily upset and hypochondriacal. CERs have moderate positive loadings on Factor IV.

The fifth factor is a measure of culture, or perhaps intellectual sophistication and quickness. Cadets who are high on Factor V are perceived by their classmates as intellectual, cultured, imaginative, artistically sensitive, and socially polished. On the other hand, cadets low on this factor are seen as boorish, clumsy, awkward, practical, and artistically insensitive. The loadings of the CERs on Factor V are moderately positive.

Factor VI (emerging only for the Classes of 1962 and 1963) is quite clearly a measure of physical ability. It is not a strong factor; however, in each class the only variables which have appreciable loadings on Factor VI are those measuring some aspect of physical proficiency. Thus it is a fairly specific factor. Interestingly enough, although none of the Factor IV variables have appreciable loadings on Factor VI, the physical aptitude variables comprising Factor VI load moderately on Factor IV. This suggests that cadets rated by their peers as emotionally stable and well-adjusted are to a certain extent those who are physically proficient; however, physical proficiency in and of itself does not insure good adjustment or emotional stability. CERs load positively on Factor VI but only to a slight extent.

Factor VII is not a true factor since only the random variables load to any extent on this factor.

SUMMARY AND CONCLUSIONS

Cadets in Air Force Academy Classes of 1960, 1962, and 1963 (in the middle of their senior, sophomore, and freshman years respectively) rated each other on 20 personality traits as well as on physical ability and officer potential. For two of the classes, objective measures of physical proficiency were also available. Intercorrelation matrices within each class were computed and analyzed to determine the relationships between the personality trait ratings and Cadet Effectiveness Ratings, and to determine the factor structure underlying the ratings. It was found that traits such as responsibility, perseverance, good adjustment, poise, social polish, and social intelligence were most highly related to CERs while traits of surgency or extroversion such as talkativeness, frankness, adventurousness, and sociability bore little or no relationships to CERs. It was concluded that the major portion of individual differences in CERs could be accounted for by personality trait ratings. When compared with OCS candidates and majors attending Command and Staff School, the Academy cadets were found to differ little in the pattern of the personality trait versus OER relationships from these groups. Five personality trait ratings were identified which correspond closely to the five (Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture) found in other analyses. A sixth factor identified as physical ability was found also.

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APPENDIX A

USAF ACADEMY DESCRIPTION SCALE

During the next hour you will be required to describe some of the members of your squadron in many different ways. Since one of the characteristics of a good officer is the ability to judge others, the accuracy with which you describe others is important.

As a matter of general interest, descriptions and ratings similar to those presented here are common throughout industry, education, and all military organizations. Almost all officer evaluation activities rely upon ratings to satisfy many important purposes, and during your military career you will often be called upon for similar information.

You may be assured that your evaluations will not be shown to any member of your group. No member of your squadron will know how you evaluated him.

The USAF ACADEMY DESCRIPTION SCALE booklet consists of 22 behavior descriptions. Each of these descriptions represents the extremes of a scale. You will be asked to indicate which members of your section or group are best described by the left side of the scale, which are best described by the right side, and which fall in the middle. The number to be rated as best described by each end of the scale is indicated on your squadron roster. You have been furnished a set of Mark Sense Cards numbered from 01 through 22 to correspond to the 22 behavior descriptions. Use the Mark Sense Cards to record your choices. Do not record any choices in this booklet.

On the next page you will find a sample Mark Sense Card and instructions on how to complete the USAF ACADEMY DESCRIPTION SCALE.

Name	Doc	John	Q	(Last)	(First)	(Middle)	Serial No.	0045	Card No.	09
1	A	M	B							
2	A	M	B							
3	A	M	B							
4	A	M	B							
5	A	M	B							
6	A	M	B							
7	A	M	B							
8	A	M	B							
9	A	M	B							
10	A	M	B							
11	A	M	B							
12	A	M	B							
13	A	M	B							
14	A	M	B							
15	A	M	B							
16	A	M	B							
17	A	M	B							
18	A	M	B							
19	A	M	B							
20	A	M	B							
21	A	M	B							
22	A	M	B							
23	A	M	B							
24	A	M	B							
25	A	M	B							
26	A	M	B							
27	A	M	B							
28	A	M	B							
29	A	M	B							
30	A	M	B							
31	A	M	B							
32	A	M	B							
33	A	M	B							
34	A	M	B							
35	A	M	B							
36	A	M	B							
37	A	M	B							
38	A	M	B							
39	A	M	B							
40	A	M	B							
41	A	M	B							
42	A	M	B							
43	A	M	B							
44	A	M	B							
45	A	M	B							
46	A	M	B							
47	A	M	B							
48	A	M	B							
49	A	M	B							
50	A	M	B							

Note the following:

(1) Your Mark Sense Cards should be in proper sequence from number 01 through 22. Please check the cards as you mark them to be sure they are in order. These numbers are shown in the illustrated form at the left as CARD NUMBER.

(2) Print your name and serial number in the place provided on your Mark Sense Card numbered 01. Provide this information only on that card and no others.

(3) Look at the column of numbers on the illustrated form at the left that indicates the ROSTER NUMBERS OF CADETS IN YOUR SQUADRON. The numbers correspond to those shown on your printed squadron roster next to each cadet's name. You will use only the left column of numbers (1 through 25). You are not to use the right column of numbers (26 through 50) for any reason.

(4) Beside each number, there are three choices on your cards--"A", "M", and "B". Look at the illustration: the "A" next to numbers 2, 8, 11, 14, and 17 has been darkened in. This means that the cadet completing the Mark Sense Card considered cadets with those numbers (the numbers beside their names on the roster) as best described by the "A" side of Description 09. The "B" next to numbers 1, 5, 12, 13, and 16 were darkened, indicating that the cadets with corresponding roster numbers were considered best described by the "B" side of Description 09. The "M" next to the numbers 3, 4, 6, 7, 9, 10, 15, 18, 19, 20, 21, 22, 23, 24, and 25 has been marked in the illustration above. The "M" responses are to be marked to indicate all the cadets on the roster who are not described by either the "A" or the "B" side of the description. It is not sufficient to merely leave blank the numbers representing the people not described by either end of the scale. You are to mark all five of your "A" choices, then all five of your "B" choices, and finally the "M" choice is to be darkened for all the rest. Do not leave any blanks. Note that the whole bracketed area (A) or (B) or (M) has been darkened--it is essential that the complete area within the brackets be darkened, and that any erasures be as thorough as possible.

(5) Examine the "A" and "B" sides of Description 01 below. Determine which five cadets (other than yourself) are best described by "A" and fill in the "A's" on the Mark Sense Card next to their roster numbers (using Mark Sense Card numbered 01). Then determine the five cadets best described as "B" and darken the "B's" next to their numbers on the same Mark Sense Card. Then go back and mark "M" beside all the rest. Go on to the next description (02) and use Mark Sense Card numbered 02 to record your choices. Repeat until all 22 descriptions are completed.

REMEMBER: FIVE CADETS (NO MORE AND NO LESS) MUST BE DESCRIBED AS "A" AND FIVE AS "B" FOR EACH DESCRIPTION. DO NOT DESCRIBE YOURSELF AS EITHER "A" OR "B" FOR ANY DESCRIPTION.

PEER DESCRIPTION SCALE

There is no time limit for the completion of this scale.

DESCRIPTION 01 (Use Mark Sense Card No. 01)

A--Talks a lot, to everybody.

B--Says very little; gives the impression of being occupied with thoughts.

DESCRIPTION 02 (Use Mark Sense Card No. 02)

A--Does not mind when people use his property, time, or energy. Generous, gives people "the benefit of the doubt" when their motives are in question. Warm-hearted.

B--Gets irritable, "awkward", or resentful if property or other rights are trespassed on. Inclined to be "close" and grasping. Is generally surly, hard, and spiteful.

DESCRIPTION 03 (Use Mark Sense Card No. 03)

A--Tidy, over-precise, especially over details. Drives other people to be the same. Strict, fussy, pedantic. Insists on everything being orderly. (In these respects rather "uncomfortable to live with.") Seems unable to relax. Miserly.

B--Rather careless of detail. Lazy. Careless over expenditures. Has no difficulty in relaxing. Enjoys ease.

DESCRIPTION 04 (Use Mark Sense Card No. 04)

A--Rarely seems to get tired or upset. Goes on with what he is doing regardless of distractions. Rarely shows any nervousness.

B--Easily gets tired and overwrought. Is frequently irritable. Jumps when spoken to. Shows occasional signs of "nervousness" (e.g., fidgeting, tremor, digestive disturbances, poor memory). Constantly complains of fatigue.

DESCRIPTION 05 (Use Mark Sense Card No. 05)

A--Artistically sensitive to surroundings, art. Fastidious, not too easily pleased.

B--Not showing artistic taste. Not interested in artistic subjects. Insensitive to esthetic effects.

DESCRIPTION 06 (Use Mark Sense Card No. 06)

A--Comes out readily with his real feelings on various questions; so that you know where you stand with him. Expresses his feelings, sad or gay, easily and constantly. Easy to understand.

B--Keeps his thoughts and feelings to himself. Often leaves you puzzled as to the motives for his actions. Inscrutable. Does not give away information for the fun of it.

DESCRIPTION 07 (Use Mark Sense Card No. 07)

A--Not prone to jealousy.

B--Becomes readily jealous of people. Unreasonably hostile.

DESCRIPTION 08 (Use Mark Sense Card No. 08)

A--Has a sense of responsibility to his parents, community, etc. Can be depended upon to be loyal to agreed standards. Trustworthy.

B--Does not seem to take responsibilities seriously. Undependable. Thoughtless. Refuses to accept responsibilities of his age.

DESCRIPTION 09 (Use Mark Sense Card No. 09)

A--Calm, tough, "What's the fuss about?" attitude.

B--Worries constantly, sensitive, hurried; seems to suffer from more anxieties than other people. Slight suppressed agitation most of the time.

DESCRIPTION 10 (Use Mark Sense Card No. 10)

A--Rushes in carefree fashion into new experiences, situations, emergencies. Ready to meet anything. Happy-go-lucky. Has a great appetite for life.

B--Avoids the strange and new. Looks at all aspects of a situation over-cautiously. Keeps clear of difficulties. Uninquiring, lacking in desire to try new things.

DESCRIPTION 11 (Use Mark Sense Card No. 11)

A--Gentle-tempered. Blames himself (or nobody) if things go wrong.

B--Goes his own way regardless of others. Blames others, not himself, whenever there is conflict or things go wrong. Headstrong. Predatory--tends to use other people for his own ends.

DESCRIPTION 12 (Use Mark Sense Card No. 12)

A--Careful about principles of conduct. Guided by ideals, ethics, unselfishness. Scrupulously upright where personal desires conflict with principle.

B--Inclined to somewhat shady transactions. Not too careful about right and wrong where own wishes are concerned. Not particularly just, ethical, or unselfish.

DESCRIPTION 13 (Use Mark Sense Card No. 13)

A--Self-possessed, hard. Does not lose composure, e.g. through emotional provocation.

B--Easily embarrassed or put off balance in conversation. Gets confused in emergency. Blushes, shows excitability, becomes incoherent. (Not general emotionality, but momentary "nervousness".)

DESCRIPTION 14 (Use Mark Sense Card No. 14)

A--Polite and charming in social situations. Deals with people gracefully and skillfully. Refined with speech, manner, etc. Familiar with good etiquette.

B--Clumsy in social situations. Crude in speech, manner, etc.

DESCRIPTION 15 (Use Mark Sense Card No. 15)

A--Likes to be in large groups. Seeks people out for the sake of company. Likes parties as often as possible. Not fond of being alone.

B--Does not seem to miss company of others. Goes his own way.

DESCRIPTION 16 (Use Mark Sense Card No. 16)

A--Generally tends to say yes when invited to cooperate. Outgoing. Ready to meet people at least half-way. Finds ways of cooperating despite difficulties.

B--Inclined to raise objections to a project, cynical or realistic. "Cannot be done." Uninterested or unfavorable attitude to joining in. Inclined to be "difficult".

DESCRIPTION 17 (Use Mark Sense Card No. 17)

A--Has wide interest and knowledge, especially in intellectual matters. Is thoughtful and introspective about life. Enjoys analytical, penetrating discussions in small groups.

B--Rather ignorant. Unreflective. Does not read much or enjoy intellectual problems. Narrow, simple interests.

DESCRIPTION 18 (Use Mark Sense Card No. 18)

A--Sees a job through in spite of difficulties or temptations. Strong-willed. Persisting in his motives. Painstaking and thorough.

B--Gives up rather easily. Led astray from main purposes by stray impulses. Slipshod--does not finish a job thoroughly.

DESCRIPTION 19 (Use Mark Sense Card No. 19)

A--Does not worry about illnesses.

B--Dwells on illness or hurts a great deal. Magnifies relatively trivial illnesses. Fusses a good deal over bodily symptoms.

DESCRIPTION 20 (Use Mark Sense Card No. 20)

A--Inclined to be governed by a vivid imagination. Thinks of unusual angles and aspects of a question. Sensitive to a multitude of emotional and other possibilities not realized by the average person. Intuitive, more interested in mental than material and practical aspects of a situation.

B--Solves questions in a logical matter-of-fact fashion which often ignores fine points or unusual possibilities. Heavily and "blindly" logical, refusing to see intangibles. More interested in material than mental aspects of a situation.

DESCRIPTION 21 (Use Mark Sense Card No. 21)

A--Has high physical aptitude.
Well-coordinated. Is a good
athlete.

B--Has low physical aptitude.
Poorly coordinated. Does
not perform athletic tasks
well.

DESCRIPTION 22 (Use Mark Sense Card No. 22)

A--Will probably be one of
the most effective officers
in this group.

B--Will probably be one of
the least effective officers
in this group.

APPENDIX B: INTERCORRELATION TABLES

Table 5. Intercorrelation Matrix for Class of 1960

Variable Name	Var Nr	1	2	3	4	5	6	7	8	9	10	11
Talkative	1		17	-31	-03	-05	70	-13	-14	07	58	-23
Good-Natured	2	17		-28	64	12	35	69	40	49	46	71
Insistently Orderly	3	-31	-28		-06	30	-37	-17	51	-47	-63	-03
Well-Adjusted	4	-03	64	-06		13	16	71	52	65	29	66
Artistically Sensitive	5	-05	12	30	13		00	04	39	-09	-04	10
Frank	6	70	35	-37	16	00		15	-02	29	68	-00
Not Jealous	7	-13	69	-17	71	04	15		39	59	26	78
Responsible	8	-14	40	51	52	39	-02	39		13	-15	50
Calm	9	07	49	-47	65	-09	29	59	13		54	41
Adventurous	10	58	46	-63	29	04	68	26	-15	54		10
Mild, Gentle	11	-23	71	-03	66	10	-00	78	50	41	10	
Conscientious	12	-26	43	52	52	31	-11	46	79	09	-25	61
Poised, Tough	13	02	42	-11	70	16	22	53	44	64	37	39
Socially Polished	14	01	38	25	51	50	15	38	63	28	11	39
Sociable	15	72	32	-54	05	-17	69	09	-22	27	72	-03
Cooperative	16	13	79	-07	66	15	29	68	55	42	34	71
Intellectual, Cultured	17	01	35	23	42	66	16	31	58	16	08	31
Persevering	18	-14	34	52	52	38	00	34	83	17	-13	39
Not Hypochondriacal	19	-00	56	-27	70	-00	18	61	32	67	44	50
Imaginative	20	14	34	-04	28	49	20	23	23	15	21	19
High Physical Aptitude	21	18	29	-17	38	-08	26	26	18	50	38	17
High Officer Potential	22	08	57	11	74	29	30	58	72	56	29	54
CER	23	09	41	22	59	27	22	41	69	37	17	41

NOTE: Decimal points omitted preceding all correlation coefficients.

Table 5 (Continued)

Var Nr	12	13	14	15	16	17	18	19	20	21	22	23	Mean	SD
1	-26	02	01	72	13	01	-14	-00	14	18	08	09	99.59	52.67
2	43	42	38	32	79	35	34	56	34	29	57	41	99.58	46.72
3	52	-11	25	-54	-07	23	52	-27	-04	-17	11	22	99.61	53.93
4	52	70	51	05	66	42	52	70	28	37	74	59	99.75	45.20
5	31	16	50	-17	15	66	38	-00	49	-08	29	27	99.71	44.31
6	-11	22	15	69	29	16	00	18	20	26	30	22	99.63	43.64
7	46	53	38	09	68	31	34	61	23	26	58	41	99.68	43.89
8	79	44	63	-22	55	58	63	32	23	18	72	69	99.75	52.47
9	09	64	28	27	42	16	17	67	15	50	56	37	99.68	47.03
10	-25	37	11	72	34	08	-13	44	21	38	29	17	99.67	46.31
11	61	39	39	-03	71	31	39	50	19	17	54	41	99.70	44.96
12		30	57	-31	57	49	75	31	19	15	63	61	99.62	49.83
13	30		50	08	44	47	48	59	26	34	68	58	99.82	43.86
14	57	50		06	55	55	57	36	42	23	71	72	99.75	47.01
15	-31	08	06		26	-10	-27	19	11	20	12	05	99.54	50.83
16	57	44	55	26		41	47	55	32	26	68	55	99.63	44.20
17	49	47	55	-10	41		62	26	59	09	57	48	99.66	47.39
18	75	48	57	-27	47	62		36	27	19	71	65	99.71	49.91
19	31	59	36	19	55	26	36		14	50	62	47	99.74	43.44
20	19	26	42	11	32	59	27	14		-03	31	28	99.68	34.55
21	15	34	23	20	26	09	19	50	-03		47	42	99.73	58.79
22	63	68	71	12	68	57	71	62	31	47		83	99.67	55.28
23	61	58	72	05	55	48	65	47	28	42	83		849.76	73.30

Table 6. Intercorrelation Matrix for Class of 1962

Variable Name	Var												
	Nr	1	2	3	4	5	6	7	8	9	10	11	12
Talkative	1		12	-19	14	-03	77	-08	-03	20	69	-26	-33
Good-Natured	2	12		-10	64	08	24	76	54	45	29	74	53
Insistently Orderly	3	-19	-10		-10	45	-20	-23	51	-41	-47	-05	50
Well-Adjusted	4	14	64	-10		12	20	71	54	77	42	56	42
Artistically Sensitive	5	-03	08	45	12		-01	04	48	-08	-12	14	41
Frank	6	77	24	-20	20	-01		05	09	26	69	-11	-21
Not Jealous	7	-08	76	-23	71	04	05		46	60	25	80	52
Responsible	8	-03	54	51	54	48	09	46		28	-02	55	80
Calm	9	20	45	-41	77	-08	26	60	28		55	38	09
Adventurous	10	69	29	-47	42	-12	69	25	-02	55		-03	-30
Mild, Gentle	11	-26	74	-05	56	14	-11	80	55	38	-03		70
Conscientious	12	-33	53	50	42	41	-21	52	80	09	-30	70	
Poised, Tough	13	28	38	-06	73	14	30	44	45	74	47	25	18
Socially Polished	14	21	46	25	59	53	26	39	69	42	29	40	49
Sociable	15	74	24	-43	24	-19	70	09	-09	34	79	-10	-36
Cooperative	16	18	83	-07	65	15	31	72	56	46	39	69	52
Intellectual, Cultured	17	15	21	39	35	71	18	14	56	15	13	12	39
Persevering	18	03	35	60	46	54	10	28	82	19	-03	33	65
Not Hypochondriacal	19	13	52	-22	72	-09	23	64	37	69	45	47	28
Imaginative	20	23	25	13	28	57	25	15	34	16	29	16	21
High Physical Aptitude	21	14	31	-16	51	-20	22	39	28	57	40	27	12
High Officer Potential	22	22	55	25	72	35	31	52	79	57	35	47	55
HSAI Athletic	23	08	21	-16	23	-23	11	22	06	24	24	16	01
HSAI Non-athletic	24	15	15	20	11	12	20	05	25	-03	09	09	17
Physical Aptitude	25	-02	02	03	15	-14	-02	10	14	15	08	13	13
Grade in Physical Ed	26	01	-09	-02	19	-10	02	04	12	25	15	-01	03
CER Score	27	28	26	37	48	25	27	20	59	33	25	13	34
Random Variable	1	06	05	-08	00	04	14	05	00	12	16	01	-11
Random Variable	2	-04	06	-04	05	-05	02	01	-03	06	-03	-02	-01
Random Variable	3	04	-02	09	-01	-05	-05	-06	-02	-05	03	-01	-01
Random Variable	4	02	06	-08	11	-05	05	03	01	16	10	04	-04

NOTE: Decimal points omitted preceding all correlation coefficients.

Table 6 (Continued)

Variable Name	Var												
	Nr	13	14	15	16	17	18	19	20	21	22	23	24
Talkative	1	28	21	74	18	15	03	13	23	14	22	03	15
Good-Natured	2	38	46	24	82	21	35	52	25	31	55	21	15
Insistently Orderly	3	-06	25	-43	-07	40	60	-22	13	-16	25	-16	20
Well-Adjusted	4	73	59	24	65	35	46	72	28	51	72	23	11
Artistically Sensitive	5	14	53	-19	15	71	54	-09	57	-20	35	-23	12
Frank	6	30	26	70	31	18	10	23	25	22	31	11	20
Not Jealous	7	44	39	09	72	14	28	64	15	39	52	22	05
Responsible	8	45	69	-09	56	56	82	37	34	28	79	06	25
Calm	9	74	42	34	46	15	19	69	16	57	57	24	-03
Adventurous	10	47	29	79	39	13	-03	45	29	40	35	24	09
Mild, Gentle	11	25	40	-10	69	12	33	47	16	27	47	16	09
Conscientious	12	18	49	-36	52	39	65	28	21	12	55	01	17
Poised, Tough	13		57	31	41	44	47	59	32	48	73	20	14
Socially Polished	14	57		25	56	67	66	40	55	32	80	07	23
Sociable	15	31	25		32	04	-14	31	21	30	21	18	17
Cooperative	16	41	56	32		27	41	56	29	33	61	19	20
Intellectual, Cultured	17	44	67	04	27		72	17	72	04	62	-11	21
Persevering	18	47	66	-14	41	72		28	41	22	78	01	23
Not Hypochondriacal	19	59	40	31	56	17	28		18	67	57	32	10
Imaginative	20	32	55	21	29	72	41	18		04	45	-04	16
High Physical Aptitude	21	48	32	30	33	04	22	67	04		50	61	10
High Officer Potential	22	73	80	21	61	62	78	57	45	50		18	24
HSAI Athletic	23	20	07	18	19	-11	01	32	-04	61	18		05
HSAI Non-athletic	24	14	23	17	20	21	23	10	16	10	24	05	
Physical Aptitude	25	19	08	01	05	-04	12	25	-04	56	19	49	05
Grade in Physical Ed	26	25	19	08	-04	02	13	23	-03	52	23	32	05
CER Score	27	57	63	14	30	49	64	31	33	35	72	11	22
Random Variable	1	03	04	09	05	03	00	-01	01	07	04	03	01
Random Variable	2	02	01	04	02	03	-03	13	-05	02	02	03	-00
Random Variable	3	-01	02	04	00	-03	-03	02	-02	04	-01	10	10
Random Variable	4	08	03	09	09	04	03	09	06	08	04	09	-03

(Table continues on next page)

Table 6 (Continued)

Variable Name	Var								Mean	SD
	1r	25	26	27	1	2	3	4		
Talkative	1	-02	01	28	06	-04	04	02	102.87	43.05
Good-Natured	2	02	-09	26	05	06	-02	05	101.12	39.13
Insistently Orderly	3	03	-02	37	-08	-04	09	-03	104.45	42.29
Well-Adjusted	4	15	19	48	00	05	-01	11	101.19	37.17
Artistically Sensitive	5	-14	-10	25	04	-05	-05	-05	102.70	39.76
Frank	6	-02	02	27	14	02	-05	05	102.30	31.54
Not Jealous	7	10	04	20	05	01	-06	03	100.25	38.33
Responsible	8	14	12	59	00	-03	-02	01	102.97	43.83
Calm	9	15	25	33	12	06	-05	16	99.41	40.32
Adventurous	10	08	15	25	16	-03	03	10	100.04	37.68
Mild, Gentle	11	13	-01	13	01	-02	-01	04	101.62	39.76
Conscientious	12	13	03	34	-11	-01	-01	-04	102.64	43.69
Poised, Tough	13	19	25	57	03	02	-01	08	101.30	39.51
Socially Polished	14	08	19	63	04	01	02	03	102.19	42.75
Sociable	15	01	08	14	09	04	04	09	100.03	42.74
Cooperative	16	05	-04	30	05	02	00	09	102.50	38.48
Intellectual, Cultured	17	-04	02	49	03	03	-03	04	104.36	43.92
Persevering	18	12	13	64	00	-03	-03	03	104.95	43.11
Not Hypochondriacal	19	25	23	31	-01	13	02	09	101.24	37.76
Imaginative	20	-04	-03	33	01	05	-02	06	102.27	30.73
High Physical Aptitude	21	56	52	35	07	02	04	08	93.67	53.56
High Officer Potential	22	19	23	72	04	02	-01	04	103.12	48.25
HSAI Athletic	23	49	32	11	03	03	10	09	516.61	125.89
HSAI Non-athletic	24	05	05	22	01	-00	10	-03	548.35	114.65
Physical Aptitude	25		61	17	-06	-04	19	06	555.26	82.36
Grade in Physical Ed	26	61		28	02	-11	13	06	81.63	3.74
CER Score	27	17	28		-05	-08	09	-09	856.26	59.76
Random Variable	1	-06	02	-05		-07	-02	08	-6.57	102.08
Random Variable	2	-04	-11	-08	-07		02	14	1.91	98.55
Random Variable	3	19	13	09	-02	02		00	-4.64	103.95
Random Variable	4	06	00	-09	08	14	00		-4.84	100.01

Table 7. Intercorrelation Matrix for Class of 1963

Variable Name	Var Nr	1	2	3	4	5	6	7	8	9	10	11	12
Talkative	1		13	-38	22	00	81	-07	00	33	75	-25	-23
Good-Natured	2	13		09	68	31	29	79	66	44	24	77	62
Insistently Orderly	3	-38	09		12	50	-33	11	53	-23	-46	27	60
Well-Adjusted	4	22	68	12		32	37	70	72	74	43	58	51
Artistically Sensitive	5	00	31	50	32		09	25	55	05	-01	34	51
Frank	6	81	29	-33	37	09		11	15	43	74	-07	-12
Not Jealous	7	-07	79	11	70	25	11		64	47	14	82	66
Responsible	8	00	66	53	72	55	15	64		39	08	69	78
Calm	9	33	44	-23	74	05	43	47	39		61	29	12
Adventurous	10	75	24	-46	43	-01	74	14	08	61		-07	-23
Mild, Gentle	11	-25	77	27	58	34	-07	82	69	29	-07		77
Conscientious	12	-28	62	60	51	51	-12	66	78	12	-23	77	
Poised, Tough	13	34	41	08	73	35	45	39	56	75	53	28	27
Socially Polished	14	31	53	24	72	61	41	45	71	57	42	42	47
Sociable	15	83	21	-43	34	00	77	06	06	50	83	-13	-23
Cooperative	16	19	81	09	72	35	33	76	68	48	34	71	59
Intellectual, Cultured	17	14	47	41	57	75	25	41	71	33	19	40	55
Persevering	18	05	60	49	72	56	20	59	87	45	16	60	71
Not Hypochondriacal	19	19	58	05	75	19	34	59	62	68	42	49	40
Imaginative	20	33	40	10	40	49	35	30	39	29	36	27	31
High Physical Aptitude	21	28	33	-01	63	07	37	35	44	65	49	22	19
High Officer Potential	22	28	65	26	85	49	41	61	83	66	43	53	56
HSAI Athletic	23	12	20	-03	35	-02	14	24	25	38	24	17	14
HSAI Non-athletic	24	08	27	09	22	14	14	21	24	11	10	22	23
Physical Aptitude	25	04	10	06	25	01	07	12	19	26	18	09	07
CER Score	26	24	40	35	61	39	27	35	65	46	28	32	43
Random Variable	1	04	00	-04	02	-04	04	00	01	11	00	-03	-04
Random Variable	2	-01	-05	-02	00	02	-02	-04	-02	02	00	-01	-03
Random Variable	3	05	00	-02	10	01	06	-02	05	07	04	01	-03
Random Variable	4	01	01	-03	03	00	-03	06	02	04	01	04	04

NOTE: Decimal points omitted preceding all correlation coefficients.

(Table continues on next page)

Table 7 (Continued)

Variable Name	Var Nr	13	14	15	16	17	18	19	20	21	22	23	24
Talkative	1	34	31	83	19	14	05	19	33	28	28	12	08
Good-Natured	2	41	53	21	81	47	60	58	40	33	65	20	27
Insistently Orderly	3	08	24	-43	09	41	49	05	10	-01	26	-03	09
Well-Adjusted	4	73	72	34	72	57	72	75	40	63	85	35	22
Artistically Sensitive	5	35	61	00	35	75	56	19	49	07	49	-02	14
Frank	6	45	41	77	33	25	20	34	35	37	41	14	14
Not Jealous	7	39	45	06	76	41	59	59	30	35	61	24	21
Responsible	8	56	71	06	68	71	87	62	39	44	83	25	24
Calm	9	75	57	50	48	33	45	68	29	65	66	38	11
Adventurous	10	53	42	83	34	19	16	42	36	49	43	24	10
Mild, Gentle	11	28	42	-13	71	40	60	49	27	22	53	17	22
Conscientious	12	27	47	-23	59	55	71	40	31	19	56	14	23
Poised, Tough	13		75	45	48	59	63	64	39	63	79	34	10
Socially Polished	14	75		43	61	77	72	59	55	52	84	23	19
Sociable	15	45	43		30	17	09	30	36	40	38	21	15
Cooperative	16	48	61	30		50	64	61	45	40	70	21	27
Intellectual, Cultured	17	59	77	17	50		75	47	57	30	72	11	14
Persevering	18	63	72	09	64	75		66	43	49	84	25	19
Not Hypochondriacal	19	64	59	30	61	47	66		31	66	75	36	15
Imaginative	20	39	55	36	45	57	43	31		22	49	09	17
High Physical Aptitude	21	63	52	40	40	30	49	66	22		67	55	14
High Officer Potential	22	79	84	38	70	72	84	75	49	67		36	21
HSAI Athletic	23	34	23	21	21	11	25	36	09	55	36		20
HSAI Non-athletic	24	10	19	15	27	14	19	15	17	14	21	20	
Physical Aptitude	25	28	22	13	12	11	23	28	05	49	30	40	09
CER Score	26	62	68	29	45	55	65	54	35	52	74	33	20
Random Variable	1	10	08	08	-02	02	-05	08	02	09	06	01	-02
Random Variable	2	02	-01	-02	-03	-02	-01	02	-04	04	00	00	-02
Random Variable	3	05	03	04	02	02	06	06	03	07	10	-01	03
Random Variable	4	06	02	-01	02	01	01	03	01	01	02	01	03

Table 7 (Continued)

Variable Name	Var							Mean	SD
	Nr	25	26	1	2	3	4		
Talkative	1	04	24	04	-01	05	01	102.66	45.50
Good-Natured	2	10	40	00	-05	00	01	102.95	35.74
Insistently Orderly	3	06	35	-04	-02	-02	-03	100.77	36.78
Well-Adjusted	4	25	61	02	00	10	03	103.49	37.93
Artistically Sensitive	5	01	39	-04	02	01	00	102.84	34.91
Frank	6	07	27	04	-02	06	-03	102.35	34.55
Not Jealous	7	12	35	00	-04	-02	06	102.78	35.59
Responsible	8	19	65	01	-02	05	02	104.91	43.00
Calm	9	26	46	11	02	07	04	102.61	37.65
Adventurous	10	18	28	06	00	04	01	101.84	38.99
Mild, Gentle	11	09	32	-03	-01	01	04	103.18	37.89
Conscientious	12	07	43	-04	-03	-03	04	104.17	40.59
Poised, Tough	13	28	62	10	02	05	06	102.72	38.43
Socially Polished	14	22	68	08	-01	03	02	103.33	41.78
Sociable	15	13	29	08	-02	04	-01	102.72	41.60
Cooperative	16	12	45	-02	-03	02	02	102.98	33.57
Intellectual, Cultured	17	11	55	02	-02	02	01	104.17	38.39
Persevering	18	23	65	-05	-01	06	01	105.07	39.70
Not Hypochondriacal	19	28	54	08	02	06	03	104.27	33.69
Imaginative	20	05	35	02	-04	03	01	102.17	24.46
High Physical Aptitude	21	49	52	09	04	07	01	102.74	50.54
High Officer Potential	22	30	74	06	00	10	02	105.21	47.19
HSAI Athletic	23	40	33	01	00	-01	01	502.73	124.95
HSAI Non-athletic	24	09	20	-02	-02	03	03	530.74	121.47
Physical Aptitude	25		26	02	05	02	-02	549.60	82.16
CER Score	26	26		05	-03	05	00	854.05	55.43
Random Variable	1	02	05		05	-02	00	-1.41	97.42
Random Variable	2	05	-03	05		10	04	-.11	97.75
Random Variable	3	02	05	-02	10		07	-3.39	96.12
Random Variable	4	-02	00	00	04	07		2.59	100.80

APPENDIX C: FACTOR ANALYSIS TABLES

Table 8. Normal Varimax Loadings for Class of 1960

Variable Name	Variable						h ²
	Nr	I	II	III	IV	V	
Talkative	1	84	-10	-02	-21	03	72
Good-Natured	2	32	79	11	26	15	82
Insistently Orderly	3	-38	-20	69	-29	08	76
Well-Adjusted	4	-02	55	27	61	18	78
Artistically Sensitive	5	-05	-03	25	-06	73	60
Frank	6	83	07	01	14	10	72
Not Jealous	7	-03	78	09	40	10	78
Responsible	8	-11	31	81	15	26	85
Calm	9	14	33	-11	80	03	78
Adventurous	10	72	16	-28	44	11	82
Mild, Gentle	11	-12	85	22	20	07	82
Conscientious	12	-22	47	74	05	15	84
Poised, Tough	13	05	22	22	69	31	67
Socially Polished	14	07	22	54	28	48	66
Sociable	15	83	10	-21	10	-03	75
Cooperative	16	25	72	34	23	18	79
Intellectual, Cultured	17	02	20	36	13	75	76
Persevering	18	-13	21	76	22	30	78
Not Hypochondriacal	19	09	42	11	71	02	71
Imaginative	20	16	19	04	05	68	53
Rated Physical Aptitude	21	26	06	20	56	-16	45
CER	22	14	20	67	44	22	75

NOTE: Decimal points omitted preceding all factor loadings.

Table 9. Normal Varimax Loadings for Class of 1962

Variable Name	Variable		I	II	III	IV	V	VI	VII	h ²
	Nr									
Talkative	1		87	-08	-06	01	10	-00	-03	78
Good-Natured	2		20	87	01	04	17	00	09	83
Insistently Orderly	3		-33	-12	-43	-22	58	-00	-21	74
Well-Adjusted	4		17	59	00	57	31	17	15	85
Artistically Sensitive	5		-13	01	24	-13	75	-23	-01	70
Frank	6		85	06	01	01	13	03	-05	76
Not Jealous	7		-00	84	17	32	06	07	03	84
Responsible	8		-09	54	-18	08	69	14	-20	88
Calm	9		26	37	20	74	07	22	17	88
Adventurous	10		82	12	21	27	02	14	12	84
Mild, Gentle	11		-21	88	11	05	12	07	03	85
Conscientious	12		-40	65	-20	-07	48	06	-12	89
Poised, Tough	13		28	23	-02	63	42	21	10	76
Socially Polished	14		19	35	13	16	75	12	-01	78
Sociable	15		86	08	11	05	-05	10	14	78
Cooperative	16		28	83	03	04	25	01	08	83
Intellectual, Cultured	17		07	03	12	07	89	-10	16	85
Persevering	18		-08	26	-20	13	83	10	-14	85
Not Hypochondriacal	19		19	52	-02	48	10	33	24	71
Imaginative	20		21	09	24	-06	65	-09	29	63
Rated Physical Aptitude	21		19	27	06	34	05	74	01	77
Rated Officer Potential	22		21	45	-09	37	69	22	-07	91
HSAI Athletic	23		12	18	04	01	-10	63	10	47
HSAI Non-Athletic	24		18	11	-18	-14	26	06	-02	17
PAF	25		-06	05	-02	-05	02	80	03	65
Grade in Physical Ed	26		-00	-11	08	18	09	70	-13	57
CER	27		21	12	-26	29	62	23	-21	69
Random Variables	28		13	01	20	02	00	02	-06	06
Random Variables	29		-02	03	-11	04	-02	-04	34	13
Random Variables	30		03	-03	-17	-12	02	19	11	10
Random Variables	31		05	03	04	04	-01	08	32	11

NOTE: Decimal points omitted preceding all factor loadings.

Table 10. Normal Varimax Loadings for Class of 1963

Variable Name	Variable								h ²
	Nr	I	II	III	IV	V	VI	VII	
Talkative	1	91	-07	07	-01	05	05	-01	84
Good-Natured	2	18	84	-03	-03	26	07	-03	81
Insistently Orderly	3	-46	01	25	-24	63	08	-05	73
Well-Adjusted	4	26	65	12	32	36	32	10	85
Artistically Sensitive	5	-01	14	-19	-07	82	-09	05	74
Frank	6	88	09	07	03	11	08	05	81
Not Jealous	7	-01	88	-04	08	17	12	03	83
Responsible	8	-02	59	29	01	66	22	-01	93
Calm	9	38	41	04	62	09	35	09	84
Adventurous	10	83	12	-06	27	-00	20	04	83
Mild, Gentle	11	-21	86	-05	-05	25	08	07	86
Conscientious	12	-31	65	12	-20	53	11	-04	85
Poised, Tough	13	35	28	09	51	46	34	08	80
Socially Polished	14	33	34	-03	28	72	20	-02	86
Sociable	15	89	04	-06	14	03	17	-06	85
Cooperative	16	26	80	-03	-01	31	09	01	81
Intellectual, Cultured	17	13	28	-06	15	84	01	01	83
Persevering	18	03	51	28	09	69	23	04	88
Not Hypochondriacal	19	23	55	19	34	26	36	15	72
Imaginative	20	35	25	-26	00	50	01	-01	51
Rated Physical Aptitude	21	27	23	15	29	18	69	16	77
Rated Officer Potential	22	28	50	18	25	62	34	13	94
HSAI Athletic	23	09	15	-05	06	02	67	-04	49
HSAI Non-Athletic	24	11	24	-09	-20	10	22	-06	19
PAE	25	03	02	-01	06	09	56	10	34
CER	26	18	25	22	16	57	39	-07	65
Random Variables	27	03	-04	-01	16	02	03	03	03
Random Variables	28	-02	-04	-02	02	-01	03	29	09
Random Variables	29	05	00	07	01	02	01	26	08
Random Variables	30	-02	05	-03	03	-01	01	12	02

NOTE: Decimal points omitted preceding all factor loadings.

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Aeronautical Systems Division. Personnel Laboratory, Lackland Air Force Base, Texas. RELATIONSHIPS BETWEEN PERSONALITY TRAITS, PHYSICAL PROFICIENCY, AND CADET EFFECTIVENESS REPORTS OF AIR FORCE ACADEMY CADETS, by Ernest C. Tupes and Margorie N. Kaplan. September 1961. iv + 40 p. (Project 7717; Task 17110) (ASD-TN-61-53) Unclassified report

Cadets in 3 Air Force Academy classes rated each other on 20 personality traits as well as on physical ability and officer potential. For two of the classes objective measures of physical proficiency were also available. Intercorrelation matrices within each class were analyzed to determine relationships between personality trait ratings and Cadet Effectiveness Ratings, and to determine the factor structure underlying the ratings. Traits such as responsibility, perseverance, good adjustment, poise, social polish, and social intelligence were most highly related to CERs, while traits of surgency or

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extroversion such as talkativeness, frankness, adventurousness and sociability bore little or no relationships to CERs. The major portion of individual differences in CERs are related to these personality trait ratings. When compared with OCS candidates and majors attending Command and Staff School, the Academy cadets were found to differ little from these groups in the pattern of the personality trait versus CER relationships. Five personality trait ratings were identified which correspond closely to the five (Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture) found in other analyses. A sixth factor was identified as physical ability.

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Aeronautical Systems Division. Personnel Laboratory, Lackland Air Force Base, Texas. RELATIONSHIPS BETWEEN PERSONALITY TRAITS, PHYSICAL PROFICIENCY, AND CADET EFFECTIVENESS REPORTS OF AIR FORCE ACADEMY CADETS, by Ernest C. Tupes and Margorie N. Kaplan. September 1961. iv + 40 p. (Project 7717; Task 17110) (ASD-TN-61-53) Unclassified report

Cadets in 3 Air Force Academy classes rated each other on 20 personality traits as well as on physical ability and officer potential. For two of the classes objective measures of physical proficiency were also available. Intercorrelation matrices within each class were analyzed to determine relationships between personality trait ratings and Cadet Effectiveness Ratings, and to determine the factor structure underlying the ratings. Traits such as responsibility, perseverance, good adjustment, poise, social polish, and social intelligence were most highly related to CERs, while traits of surgency or

(over)

extroversion such as talkativeness, frankness, adventurousness and sociability bore little or no relationships to CERs. The major portion of individual differences in CERs are related to these personality trait ratings. When compared with OCS candidates and majors attending Command and Staff School, the Academy cadets were found to differ little from these groups in the pattern of the personality trait versus CER relationships. Five personality trait ratings were identified which correspond closely to the five (Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Culture) found in other analyses. A sixth factor was identified as physical ability.

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